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Econometric Analysis of Investment in Tourism in the Republic of Uzbekistan

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Abstract: This article examines the role of the investment factor in the development of the tourism industry. The directions of improving the mechanisms of attracting investments, their effective use and proper organization of distribution are considered. The stages of implementation of econometric modeling of investment processes are studied.

Keywords: Investment, tourism, econometric modeling, tourism enterprise, foreign investment, investment process, modeling.

Introduction

Today, the Republic of Uzbekistan has an investment climate with all the economic, political and legal grounds to become one of the largest recipients of foreign investment, but this does not mean that Uzbekistan has done everything to attract foreign investors. Therefore, based on the above, it is necessary to develop measures to improve the mechanisms for attracting investment, its effective use, proper organization of directions and distribution.Thorough and comprehensive measures, important tasks and directions, development and clear definition of economic development programs at different levels are the key to success in ensuring the consistent and sustainable development of the tourism industry. Along with traditional cultural and historical tourism in Uzbekistan, the development and implementation of national and regional programs for the comprehensive development of its pilgrimage, ecological, educational, ethnographic, gastronomic, medical, health, sports, rural, industrial, business, It is planned to raise international cooperation to a new level, expand cooperation with the United Nations World Tourism Organization, foreign organizations involved in this activity, the location of tourism facilities in all regions of the country, radically improve the training of qualified personnel for the system.

At present, foreign and domestic investments are being attracted in all sectors of the national economy, including tourism, in order to ensure sustainable economic growth in Uzbekistan, increase employment and produce export-oriented products.At the end of 2019, the foreign trade turnover amounted to $ 42.2 billion, an increase of $ 8.7 billion over the same period last year (growth rate

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26.2%)[1].In the context of deepening reforms in the field of tourism and liberalization of the economy, a number of factors have an impact on the effective implementation of investment activities, which requires a study of the relationship between these factors. This raises economic issues such as the effective use of investments in tourism enterprises in the implementation of investment processes in the country.

Methods

The following steps were taken to implement econometric modeling of investment processes (figure 1). In econometric modeling, the database software uses data analysis of modern computer technology and a ready-made set of applications (EXEL, MCGraf, etc.). Thus, it is expedient to address the quantitative parameters that ensure the efficiency of investment in tourism enterprises in determining future indicators using econometric modeling and a comprehensive and systematic approach to the formation of its information supply.According to him, first of all, the annual indicators of the required factors grouped in the reporting forms are selected in the normative indicators of products produced by fixed assets of enterprises.

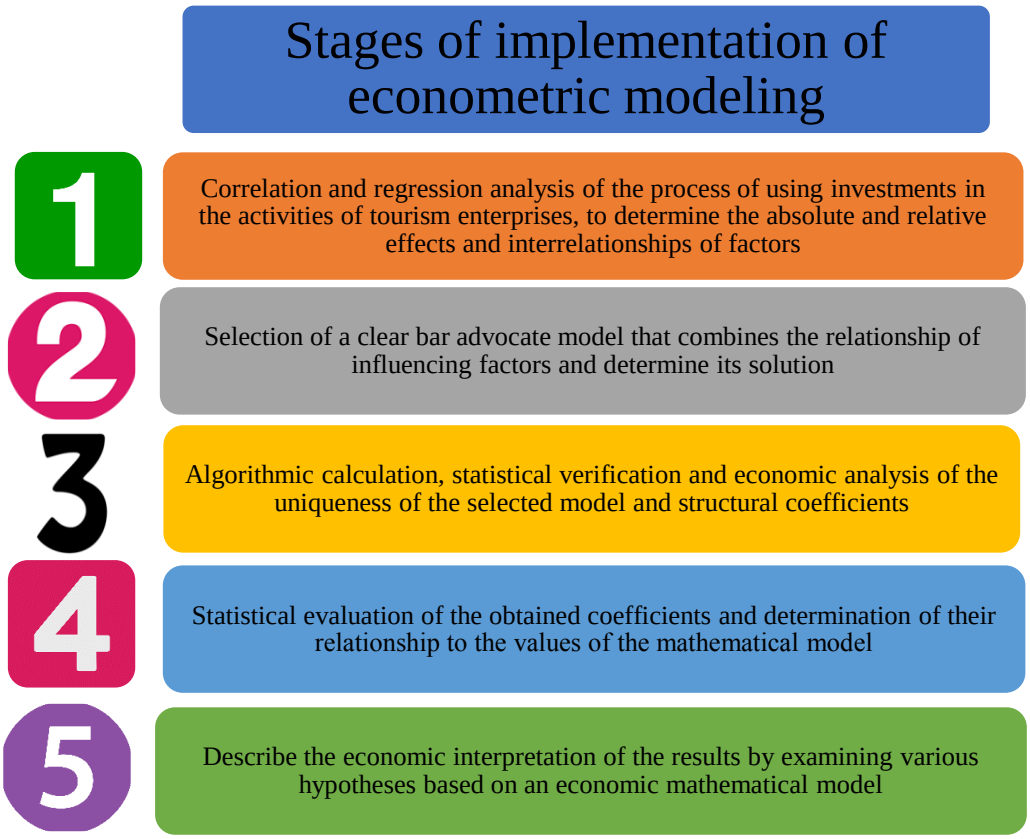

Figure 1. Econometric investment processesstages of modeling implementation

Given the nature of the investment process, we will be able to consider modeling. If *U (T)*i is the net return on investment of the economy in the future *T*-term, *i*-type production and the investment value of In-, then the return on investment in *i*-type production for the *T*-term is *q (T)* can be found through:

[1]Statistical data of the Ministry of Investments and Foreign Trade of the Republic of Uzbekistan

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$$q(T)_i = \left(\frac{\sum_{T=0}^{m} Y(T)_i}{I_n} - 1\right) * 100\%$$

Where *i*= 1,2,3, …… .., *n; T* = 1,2,3, …… .., *m.*

If it is necessary to predict how much the investment in tourism enterprises will yield in the future, then the factors involved in probability theory or expression, which are part of mathematics, are brought together (discounted). Based on the above considerations, the expected efficiency of the investment in type *i* production of the manufacturing enterprise in the *T*-term is found as follows.

$q_i = \sum_{T=1}^{m} q_n p_n$, *i*=1,2,3,……..,n;

where the probability of *p_n-i*-type production in the *T*-state is *i* = 1,2,3, …… .., *n; T* = 1,2,3, …… .., *m.*

This expression is exactly the same as the -Lagrange interpolation formula given above. In conducting financial and economic calculations related to the investment of funds of tourism enterprises, the processes of value addition and discounting can be carried out in simple and complex percentages. Simple interest rates are typically applied to short-term investments, while complex ones apply to long-term investments.

Results

The main purpose of our research is to improve the use of investments in the development of tourism in Khorezm region. To perform this analysis, a multifactor econometric model must be constructed. The following factors influencing the volume of tourist services were selected in the model as factor indicators (variables) (*x_n*):

- number of tourist organizations (x_1);

The number of companies and organizations engaged in tourism is about 400, most of which are in Tashkent (73.4%), Samarkand (13.1%), Bukhara (4.5%) and Khorezm (1%) regions. is coming.In other words, 92% of companies and organizations specializing in the provision of tourist services in Uzbekistan, and 93.1% of tourists are in these 4 regions.

- number of tourist accommodation facilities (x_2);

Hotels, hostels, home hotels, motels, camping, boarding houses and other accommodation facilities

- The amount of investment in tourism (x_3);

The result indicator (*y*) in the construction of a multifactor econometric model is the amount of investment in tourism.In constructing the model, we use the smallest squares method, which is widely used in scientific research. The general appearance of the model built by this method is as follows:

$y = a_1 \times x_1 + a_2 \times x_2 + a_3 \times x_3 + \mu$

Here:

y - result indicator (volume of tourist services);

a_n is an indicator that reflects the effect of factor indicators on the outcome indicator;

x_n - factor indicators (variables).μ - free indicator.

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The general appearance of the model and the order in which it is built are known. To build the model, we tabulate the statistical data provided by the State Statistics Committee of the Republic of Uzbekistan.

Table 1. Tourism statistics of Khorezm region

Years	Number of hotels	Number of tour company	The amount of investment in tourism	Volume of rendered services (in billions of soums)
2009	17	2	X	29,31
2010	22	3	X	26,65
2011	25	4	X	36,77
2012	30	7	X	55,62
2013	36	10	X	86,73
2014	51	16	X	83,14
2015	59	17	X	87,57
2016	72	20	1560,5	113,86
2017	56	22	2175,9	133,7
2018	69	34	3013,8	394,3
2019	152	56	384,8	657,2

We construct a model by replacing the "*x*" in the table with numbers using the method of filling tables, which is widely used in economic statistics.To build a multi-factor econometric model based on the statistics presented in the table, the next step is to use the least squares method, which is widely used in scientific analysis.

$$\begin{cases} na_0 + a_1 \sum x_i + a_2 \sum x_i^2 + \cdots a_n \sum x_i^n = \sum y_i \\ \{a_0 \sum x_i + a_1 \sum x_i^2 + \cdots a_n \sum x_i^{n+1} = \sum x_i y_i \\ \{a_0 \sum x_i^n + a_1 \sum x_i^{n+1} + \cdots a_n \sum x_i^{2n} = \sum x_n^i y_i \end{cases}$$

As a result of solving the system of equations using the least squares method above, the final view of the model we want to construct is as follows:

$y = 0{,}8749 \times x_1 + 9{,}4587 \times x_2 + 0{,}0001 \times x_3 + 0{,}1587$

By calculating the correlation coefficients, we evaluate the effect of each factor on the outcome.

r (1) = 0.67 (high dependence)

r (2) = 0.78 (high dependence)

r (3) = 0.48 (mean dependence)

We will be able to give the following conclusions and analysis of the built model:

- If there is a high correlation between the number of accommodation facilities and the volume of services provided, an increase in placement facilities by 1 unit will lead to an increase in the volume of services provided by 9.2 billionsoums (x_1);

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- With a high correlation between the volume of tourist organizations and the volume of services provided, an increase in the number of accommodation facilities by 1 unit will increase the volume of services provided by 11.7 billion soums (x_2);
- If there is a moderate correlation between the amount of investment in tourism and the volume of services provided, an increase in investment by 1 billion soums will lead to an increase in services by 8.2 billion sum (x_3);

The quality of the model can be assessed by comparing the results obtained with the built model with the data of the State Statistics Committee of the Republic of Uzbekistan. The closer the results obtained through the model are to the real statistics, the more reliable the model is, and conversely, the farther the results obtained through the model are from the real statistics, the more unreliable the model is.

Discussion

Forecast indicators can differ significantly from real indicators in the following cases:

- In case of economic and financial crises;

In the context of economic and financial crises, when there is a sharp decline in incomes, the population begins to reduce its non-primary expenditures. Abandoning tourist trips is usually one of the first limited expenses.

- "Conscious shutdown of the economy" as a result of possible new waves of the coronavirus pandemic (quarantine);

The trends of the last two years have been accompanied by a coronavirus pandemic. In the context of the pandemic, tourism remains the most affected sector. As a result of the closure of the countries for tourists, the flow of tourists has completely stopped and is in the process of recovery.

Conclusion

Radical changes in the economy include modernization, acceleration of globalization and integration processes, increasing international competition, continuous and significant quality changes in technology and structural changes in consumer demand. requires optimal decision making.

A scientific study of the socio-economic, tourism and investment potential of the country is important to reveal the problems associated with it. Therefore, econometric analysis determines the state and capabilities of the economic system and serves to ensure the emergence of high economic potential.

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